BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 National Diploma in Civil Engineering Pearson BTEC International Level 3 National Extended Diploma in Civil Engineering
Unit number and title	Unit 31: Specialist Civil Engineering Techniques
Learning aim(s) (For NQF only)	C: Examine marine applications of civil engineering
Assignment title	Principles of marine applications of civil engineering.
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have been employed as a trainee Civil Engineer in the design office of a large Civil Engineering Design Consultancy practice who specialise in the design of civil engineering infrastructure projects. A coastal local authority has approached your company to provide the design and offer advice for the civil engineering infrastructure to support the building of a new 14-kilometre section of relief road linked to a congested road network. The initial route of the road includes sections following the coastline to avoid a local town. This section of the coast has suffered from coastal erosion over the last 20 years. The initial route then turns eastward and must navigate its way across a local mountainous section before emerging into a 20-metre-deep valley crossing a river. The coastal section and tunnelling are phase two of the project. The new section of road terminates at an existing roundabout of a busy road. The local authority's vison for the key civil engineering infrastructure is to sell the area as a tourist destination with modern iconic elements which complement their location. Around 80% of the initial proposed route will pass through a National Park.
Task 1	With regards to the project in the scenario, you have been given the task of investigating the most appropriate way of providing a four-lane carriageway along the coastline and a 3-kilometre tunnel east of the coast. Your chief engineer has asked you to investigate the different approaches that can be used for the coastal protection for 2-kilometre zone that the road follows the coastline. In a written report explain the approaches used to provide coastal protection. Initial design considerations indicate that 34 reinforced concrete columns will need to be installed in

	the sea to provide support for the road. A ground investigation survey has indicted that a suitable bearing stratum is 5 metres below mean sea level. Describe why a cofferdam and caissons would be used to construct the concrete columns. Both the road and the local harbour will require protection from the often-aggressive waves of the sea. Discuss alternatives approaches to coastal protection and their suitability for this project. When considering the design parameters, coastal protection and methods of construction evaluate their interaction for the project.
Checklist of evidence required	A well referenced report with images and drawings, inclusive of clear conclusions, relating to design aspects of coastal protection and marine applications that can be adopted for the task scenario. This should be a word-processed document with appropriate formatting and page numbers, and a legible font.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
31/C.D3	Evaluate the interaction between design parameters, methods of construction and approaches to coastal protection for a given situation
31/C.M4	Discuss the suitability of alternative approaches to coastal protection for a given situation
31/C.P6	Explain the approaches used to provide coastal protection
31/C.P7	Describe the reasons why cofferdams and caissons are used in civil engineering projects

Sources of information to support you with this Assignment	Frank Harris–Modern Construction & Ground Engineering Equipment & Methods, 2nd edition, (Prentice Hall, 1995) ISBN 9780 5822 36578 Roy Holmes- Introduction to Civil Engineering Construction, 3rd Edition (College of Estate Management, 1995) ISBN 9781 8997 69308 www.ice.org.uk
Other assessment materials attached to this Assignment Brief	*Case studies* Trade Literature

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